PROFIBUS / MODBUS GATEWAY

Application Note for Communication between Premium CPU & XPS-MC Safety Controllers

eng

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Telemecanique

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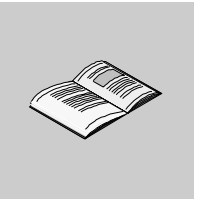

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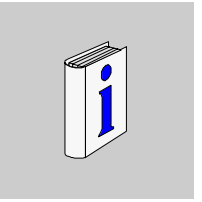

At a Glance

Document Scope

This documentation briefly describes the setup for communication between a Profibus Master DP and an XPS-MC Modbus slave. For further information about the gateway refer to the "LUFP7 Telemecanique Gateway Profibus-DP / Modbus RTU User's manual"

Validity Note

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Related Documents

Title of Documentation	Reference Number
LUFP7 Telemecanique Gateway Profibus-DP / Modbus RTU User's manual	-

User Comments

We welcome your comments about this document. You can reach us by e-mail at techpub@schneider-electric.com

Introduction to the LUFP7 Gateway

1

Introduction to the LUFP7 Gateway

Overview

The LUFP7 gateway allows a master located on a Profibus-DP network to communicate with slaves on a Modbus RTU network. This is a generic protocol converter operating in a way which is transparent to the user.
This gateway allows the user to interface many products marketed by Schneider Electric with a Profibus-DP network. These include TeSys U motor starters, Altivar driver and the XPS-MC Safety Controllers.
This document concerns the communication between a Premium CPU and an XPS-MC Safety Controller. The present documentation only briefly describes the setup for communication between a Profibus Master DP and an XPS-MC Modbus slave. For further information about the gateway refer to the "LUFP7 Telemecanique Gateway Profibus-DP / Modbus RTU User's manual".

Terminology

The term "RTU", refers to the Modbus RTU communication protocol and can be omitted. As a result, the term "Modbus" will refer to the Modbus RTU communication protocol.
As is still the case with all communication systems, the terms "input" and "output" are somewhat ambiguous. To avoid any confusion, we use a single convention throughout this document. So the notions of "input" and "output" are always as seen from the PLC, or the Profibus-DP master.
Hence, an "output" is a command signal sent to a Modbus slave, whereas an "input" is a monitoring signal generated the same Modbus slave.
Because we are only concerned with the XPS-MC signals in this document, we have only "inputs" from the Modbus slave.

Hardware Configuration Examples

2

Introduction

Overview

This chapter contains the hardware configuration examples.

What's in this Chapter?

This chapter contains the following topics:

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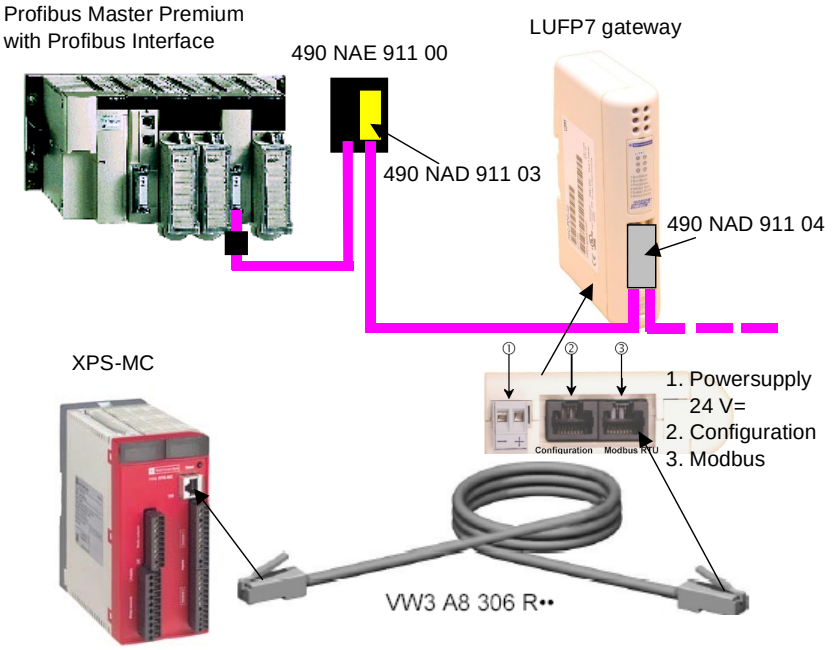
Example With a Single XPS-MC Safety Controller

Example

The diagram below shows the connections between a Profibus-DP master (for example, Premium TSX with the Profibus Interface TSX PBY 100) and a Modbus slave (XPS-MC) via the LUFP7 gateway.
Example Premium Profibus Master and one XPS-MC Safety Controller:

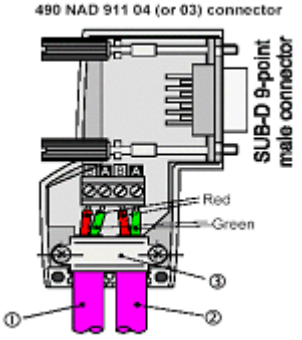


Parts used

The connection between Premium and gateway requires the following parts:

- Cable: TSX PB SCA 100
- NAD 911 04 used to join between slaves (i.e. not at the end of line, therefor no line termination).
- NAD 911 03 used at the end of the line, therefor requires line termination.

Profibus Connector NAD 911 0x



1 Incoming A cable.

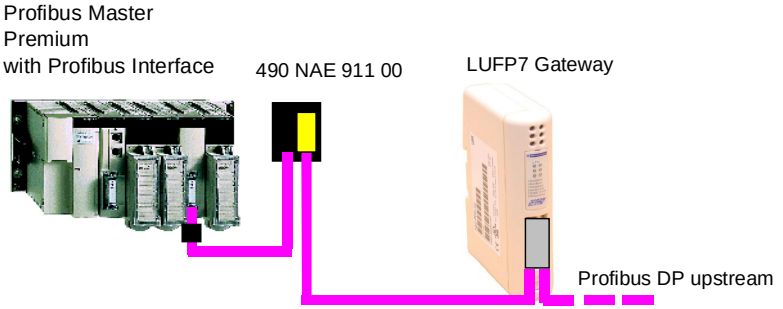
2 Outgoing A cable (absent in the case of the 490 NAD 911 03 connector).

3 Cable collar; the cable sheath must be uninsulated under the collar.

Example With Multiple XPS-MC Safety Controllers or Other Modbus Slaves

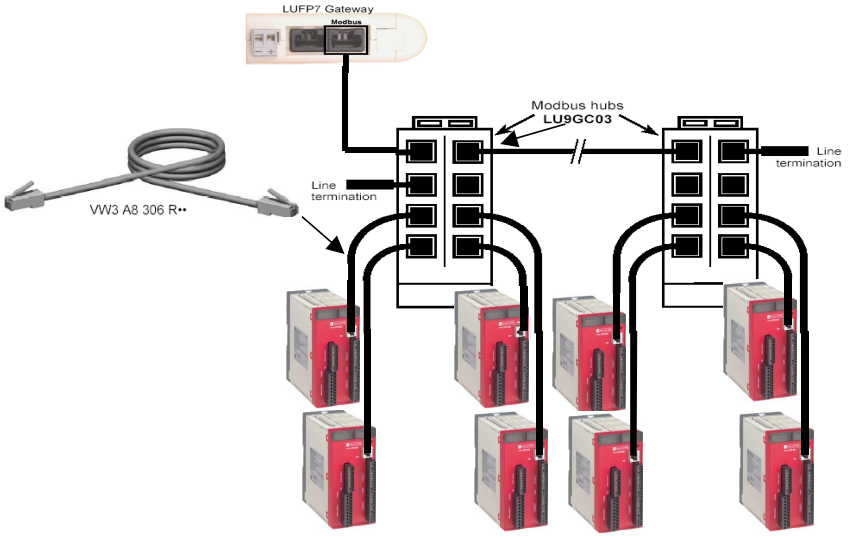
General

The connection between the Premium and the gateway will always be the same, as shown here.
Premium with LUFP7



Using Modbus Hub LU9GC03

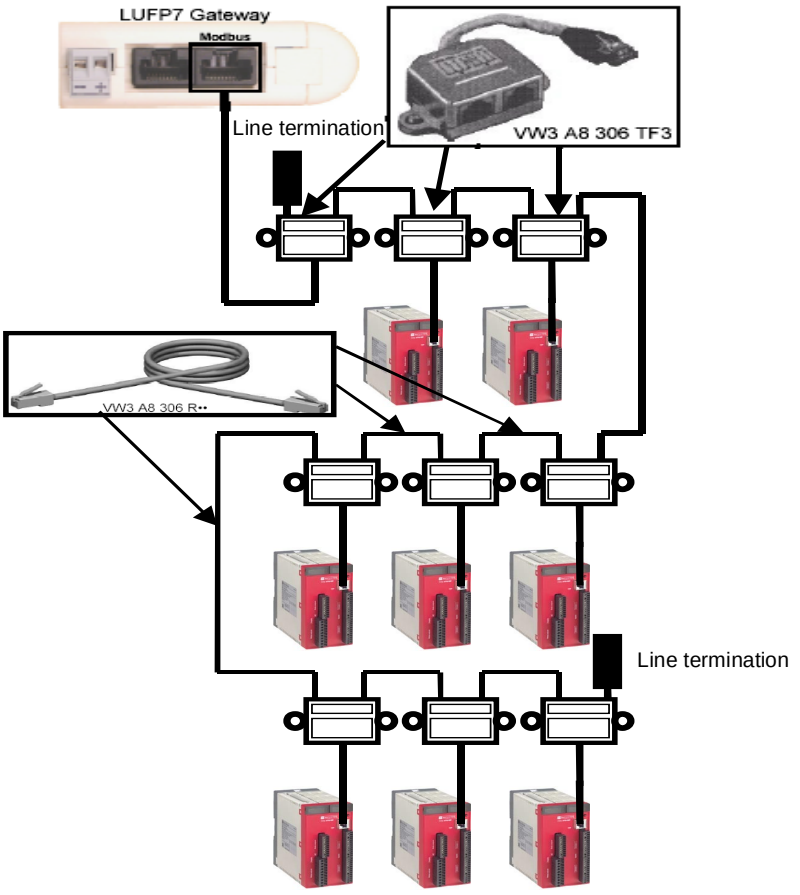
Modbus Hub LU9GC03



Maximum of 8 XPS-MC Modbus slaves

Using Bus topology with VW3 A8 306 TF3 drop boxes

VW3 A8 306 TF3 drop boxes



Line terminator

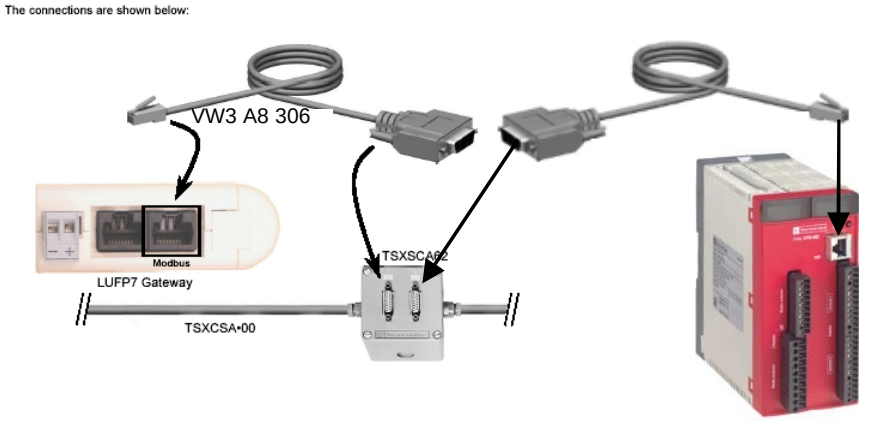
For the previous networks shown, the following line terminator is always needed for terminating the line: VW3 A8 306 RC

— VW3 A8 306 RC line termination —

Using Bus topology with tap boxes

This topology is similar to the previous one, except that it uses TSXSCA62 subscriber connectors and/or TSXCA50 subscriber connectors. We recommend using a VW3 A8 306 connection cable and the TSXCSA•00 Modbus cables. Connect the RJ45 connector on the VW3 A8 306 cable to the Modbus connector on the LUFP7 gateway.

TSXSCA62 / TSXCA50 tap boxes



- TSXSCA62 box:
  This passive box has a printed circuit fitted with screw terminals and allows the connection of two subscribers to the bus two female 15 point SUB-D connectors. It includes the line termination when the connector is located at the end. It is fitted with two screw terminals for the connection of two double twisted pair Modbus cables.
- TSXSCA50 box:
  This passive box allows a Modbus unit to be connected to a screw terminal. It includes the line termination when the connector is located at the end. It is fitted with two screw terminals for the connection of two double twisted pair Modbus cables.

Wiring recommendations

General wiring recommendations for the Modbus network:

- Use a shielded cable with 2 pairs of twisted conductors.
- Connect the reference potentials to one another.
- The maximum length of line is 1000 meters.
- The maximum length of drop line / tap-off is 20 meters.
- Do not connect more than 9 stations to a bus (8 slaves and one LUFP7 gateway).
- Keep the bus away from power cables (at least 30 cm).
- If crossings are necessary make then at right angles.
- Connect the cable shielding to the earth on each unit.
- Adapt the line at both ends using a line terminator.

Software Configuration Examples

3

Introduction

Overview

This chapter contains the software configuration examples.

What's in this Chapter?

This chapter contains the following sections:

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3.1 Introduction of the Software Configuration Example

Example With Premium PLC and an XPS-MC Safety Controller

Introduction

The example shows a configuration with following devices (see also *Example With a Single XPS-MC Safety Controller, p. 10*), the values shown in the pictures are the defaults with which the example was running. You should not change these values unless neccessary.

Hardware devices:
- Premium PLC as PROFIBUS DP MASTER
- LUFP7 as gateway for PROFIBUS SLAVE / MODBUS MASTER
- XPS-MC as MODBUS SLAVE
- Cable, connectors and line termination

Software devices:
- ABC LUFP configuration tool (See *LUFP7 Gateway with the ABC LUFP Configuration Tool, p. 18*)
- SyCon Profibus configuration tool and the relevant GSD (General Slave Data) - Files (See *SyCon Profibus Configuration Tool, p. 36*)
- Unity Pro XL application software (See *Configure Unity Pro (Profibus Master), p. 44*)
- XPSMCWIN configuration tool for the XPS-MC Safety Controllers

Note: In the following sections it is assumed, that the hardware is connected and power is on.

3.2 LUFP7 Gateway with the ABC LUFP Configuration Tool

Introduction

Overview

This section describes the steps required for the ABC LUFP configuration tool.

What's in this Section?

This section contains the following topics:

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Overview of the Information Available From the XPS-MC Safety Controller	33

LUFP7 Gateway With the ABC LUFP Configuration Tool

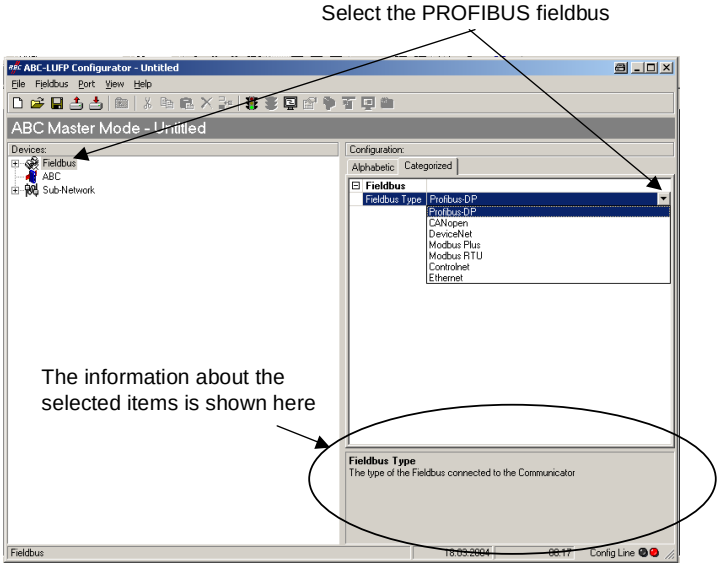
Introduction

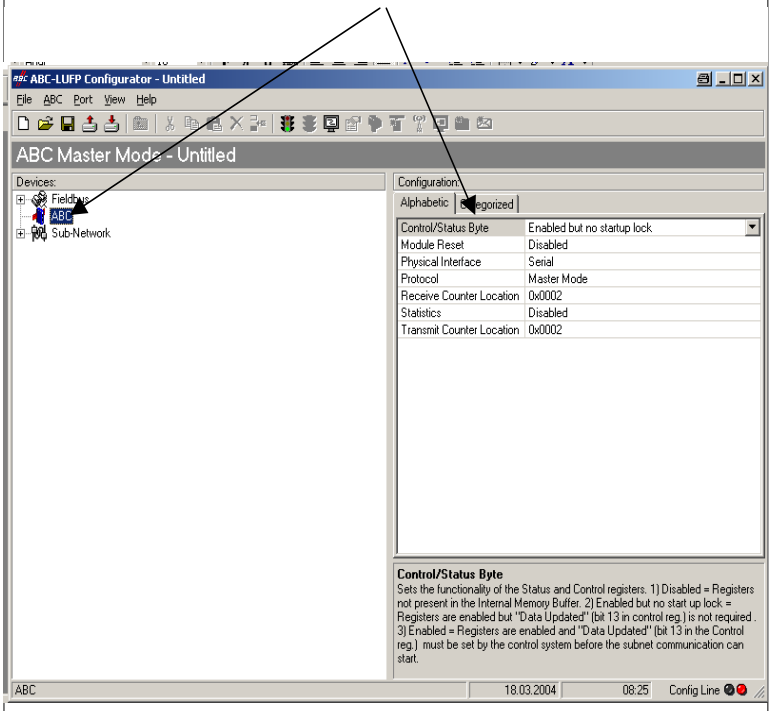
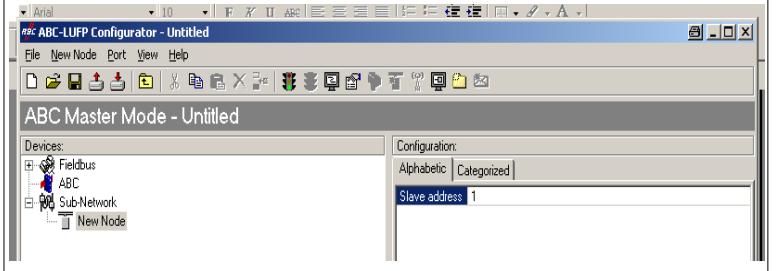
With this tool (can be downloaded from Internet: *www.hms.se/abc_lufp.shtml*), the gateway between the Profibus and the Modbus networks is configured. In this example, the Profibus Master is a Schneider Premium PLC and the Modbus Slave an XPS-MC Safety Controller. The following steps detail the configuration process:

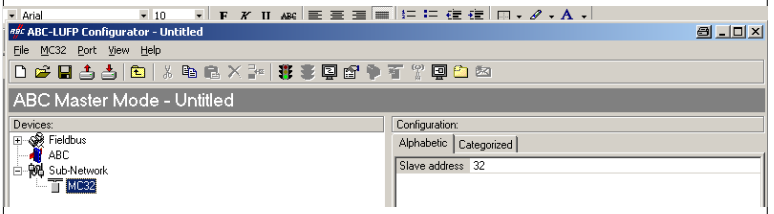
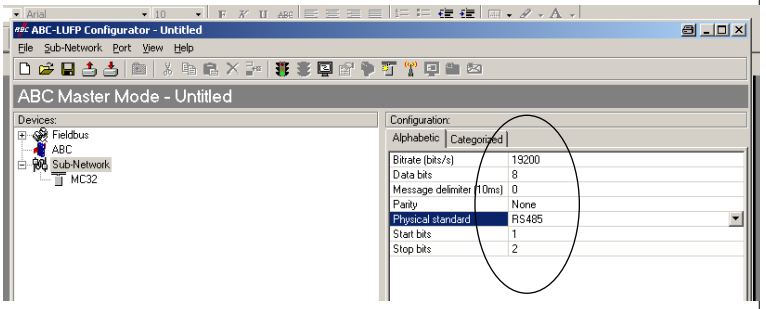
Step	Action
1	Define the networks (See *Define the Networks, p. 20*)
2	Add commands (See *Add Commands, p. 23*)
3	Save and download to the gateway (See *Save and Download to the Gateway, p. 32*)

Define the Networks

Steps to be followed for defining the networks:

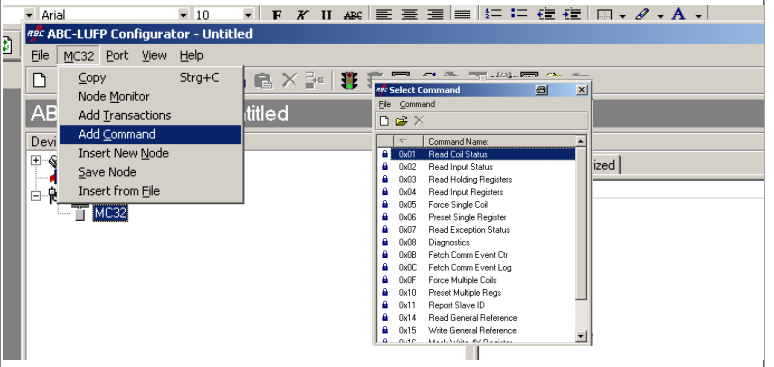
Step	Action
1	Start the ABC-LUFP-Configurator and select the PROFIBUS fieldbus. ABC-LUFP configurator: 

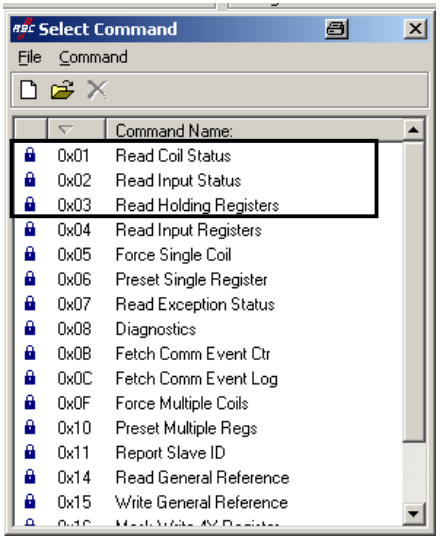
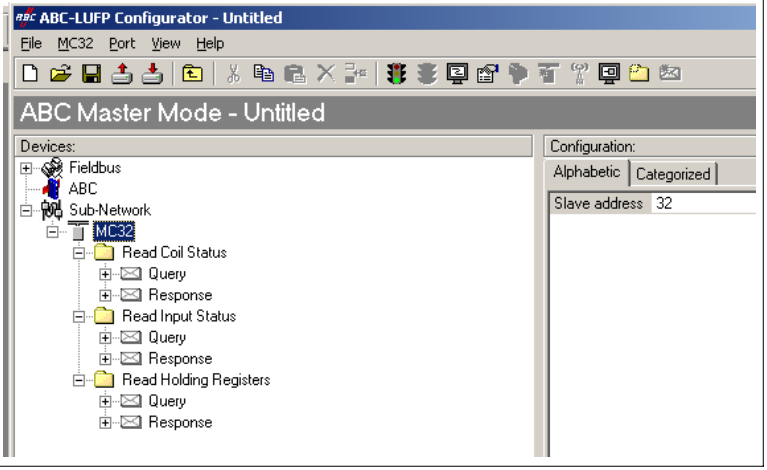
Step	Action
2	Check the values for part ABC. Default values for ABC: ABC values 
3	Insert the XPS-MC Safety Controller in the MODBUS sub-network. Slave Address for ABC: 
4	By clicking once on **New Node**, it is possible for it to be renamed. For this example, we have called it MC32.

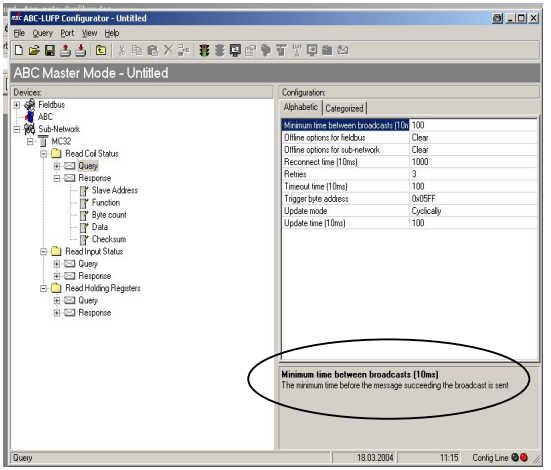
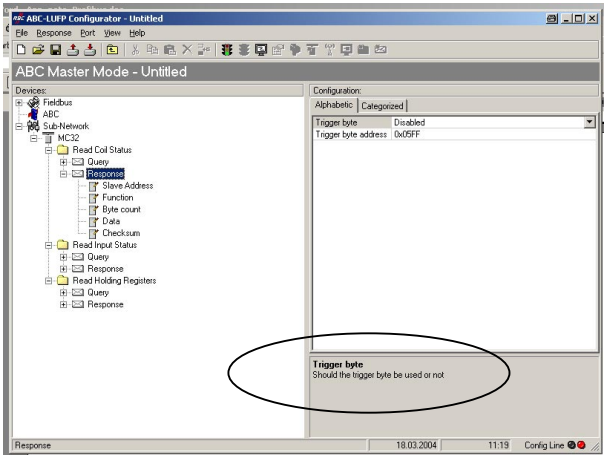
Step	Action
5	In the right-hand window, enter the slave address. e.g. 32. Update slave address: 
6	Click on **Sub-Network** to enter the relevant values in the right-hand window. In this example the standard values for the XPS-MC Safety Controller are shown. The values entered must be the same as the values configured by the XPSMCWIN configuration tool for the XPS-MC Safety Controller. Standard values for sub-network:  **Hint:** For additional slaves, click on the left window **Sub-Network**, then on **Sub-Network** in the menu bar and select **Add Node**!

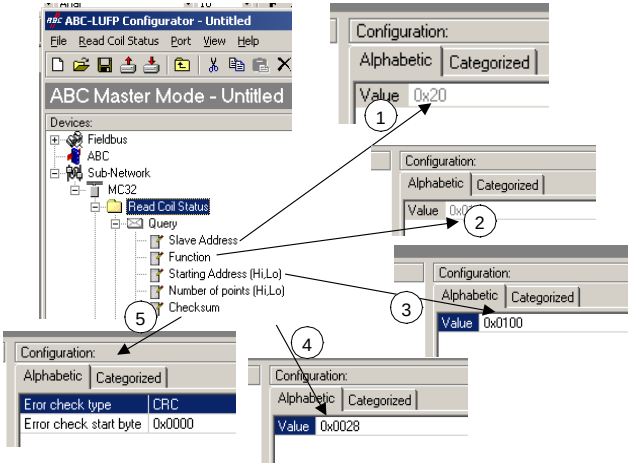
Add Commands

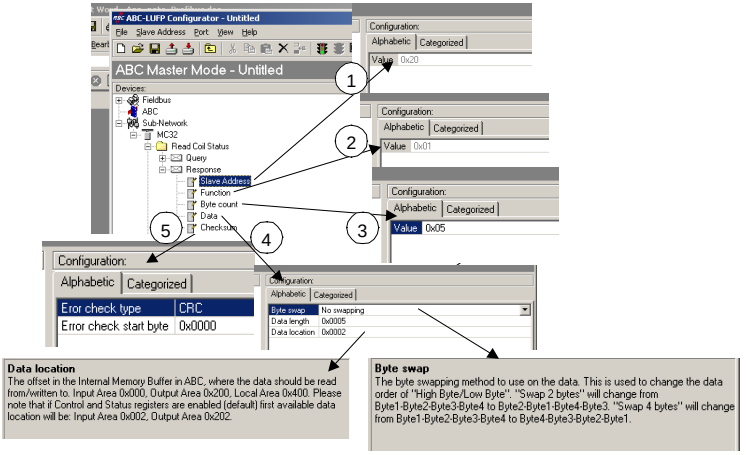
This example shows how to add all available commands. Infact, to get all the information it is only necessary to add the holding registers, because the information from the inputs (command 01 = Read Coil Status) and outputs (command 02 = Read Input Status) are included. For normal monitoring only, "command 03 = Read Holding Registers" is sufficient (refer to step 8 and 9). To gain a better understanding, this procedure shows how to add all three commands.

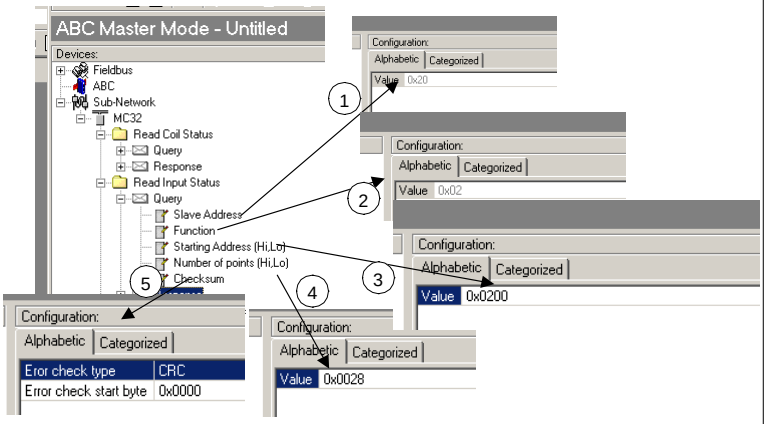
Step	Action
1	Click in the left window on **MC32**. Open **MC32** in the menu bar and select **Add Command**. Add command:  See also *Overview of the Information Available From the XPS-MC Safety Controller, p. 33*.

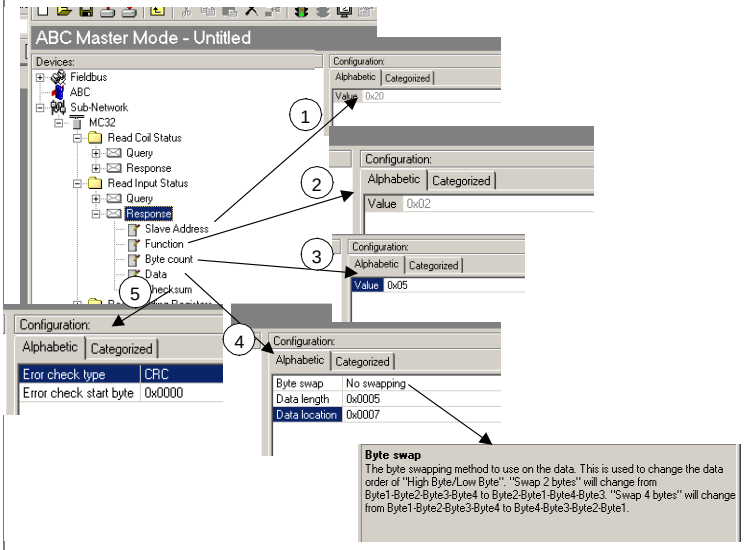
Step	Action
2	Now double click on the command 01, 02 and 03. (Only the first three commands are supported by the XPS-MC.) Select command 01, 02, 03 by double clicking:  **Result:** Now you should see the following screen: 

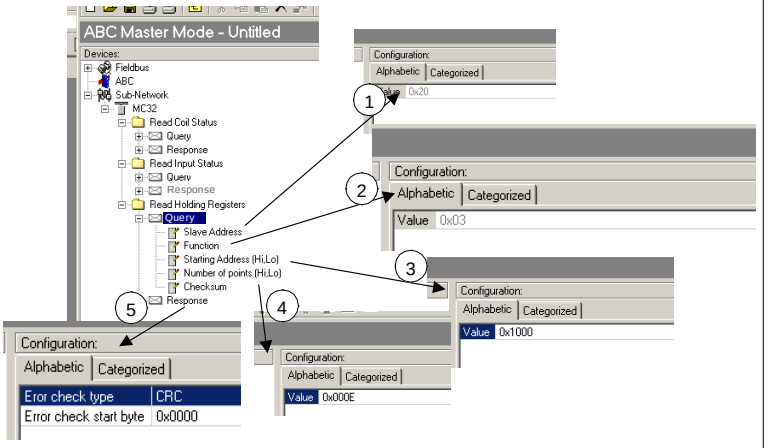
Step	Action
3	For the configuration of the query, click on **Query** (the query is the same for all three commands, i.e. read coil, read input and holding). When you select an item in the right part of the screen, a summary about the selected item is shown in the lower part of the screen.  For the configuration of the reponse, click on **Reponse** (the response is the same for all three commands , i.e read coil, read input and holding). When you select an item in the right part of the screen, a summary about the selected item is shown in the lower part of the screen.  If the data is correct for your application leave it as it is.

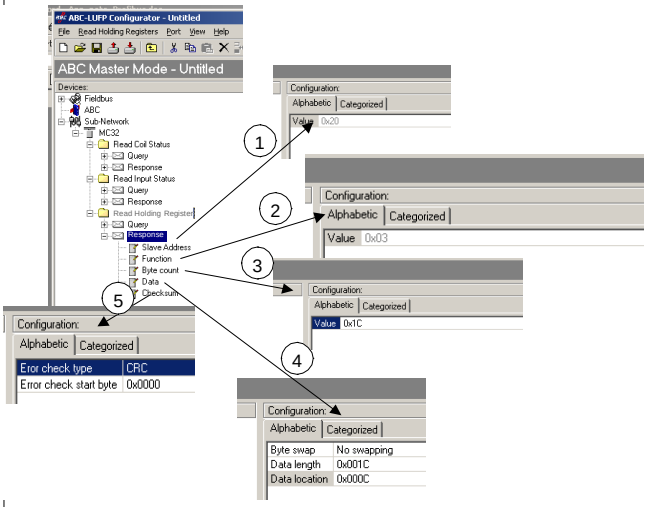
Step	Action
4	Configuration for: Read Coil Status / Query. Click on the left-hand side on the relevant function and you get the windows on the right. **Result:** All values are displayed in hexadecimal (when changing the values you can enter in decimal and it will be automatically changed into hexadecimal).  There are 5 sub menus of the query: **1.** Slave address Default is the Modbus address of the MC32 (decimal 32 = 20 hex) **2.** Function Command 01 (read coil status) **3.** Starting address Refer to table *Addresses and Commands, p. 33* column 1 **4.** Number of points Refer to table *Addresses and Commands, p. 33* column 3 (decimal 40 = 28 hex) **5.** Checksum Do not alter

Step	Action
5	Configuration for: Read Coil Status / Response. Click on the left-hand side on the relevant function and you get the windows on the right. **Result:** All values are displayed in hexadecimal (when changing the values you can enter in decimal and it will be automatically changed into hexadecimal).  There are 5 sub menus of the response: **1.** Slave address Default is the Modbus address of the MC32 (decimal 32 = 20 hex) **2.** Function Command 01 (read coil status)! **3.** Byte count Number of bytes (see query): 40 bits / 8 = 5 bytes! **4.** Date length is 5 bytes (see 3) Data location is 2, because the first 2 bytes are used by the status of the gateway **5.** Checksum Do not alter

Step	Action
6	Configuration for: Read Input Status / Query. Click on the left-hand side on the relevant function and you get the windows on the right. **Result:** All values are displayed in hexadecimal (when changing the values you can enter in decimal and it will be automatically changed into hexadecimal).  There are 5 sub menus of the query: **1.** Slave address Default is the Modbus address of the MC32 (decimal 32 = 20 hex) **2.** Function Command 02 (read input status) **3.** Starting address Refer to table *Addresses and Commands, p. 33* column 1 **4.** Number of points Refer to table *Addresses and Commands, p. 33* column 3 (decimal 40 = 28 hex) **5.** Checksum Do not alter

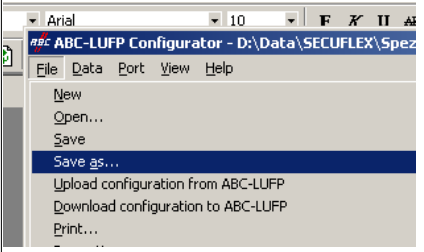
Step	Action
7	Configuration for: Read Input Status / Response. Click on the left-hand side on the relevant function and you get the windows on the right. **Result:** All values are displayed in hexadecimal (when changing the values you can enter in decimal and it will be automatically changed into hexadecimal).  There are 5 sub menus of the response: **1.** Slave address Default is the Modbus address of the MC32 (decimal 32 = 20 hex) **2.** Function Command 02 (read input status)! **3.** Byte count Number of bytes (see query): 40 bits / 8 = 5 bytes! **4.** Data length is 5 bytes (see 3) Data location is 7, because "Read coil status" starts at 2 and needs 5 bytes **5.** Checksum Do not alter

Step	Action
8	Configuration for: Holding Registers / Query. Click on the left-hand side on the relevant function and you get the windows on the right. **Result:** All values are displayed in hexadecimal (when changing the values you can enter in decimal and it will be automatically changed into hexadecimal).  There are 5 sub menus of the query: **1.** Slave address Default is the Modbus address of the MC32 (decimal 32 = 20 hex) **2.** Function Command 03 (holding registers) **3.** Starting address Refer to table *Addresses and Commands, p. 33* column 1 **4.** Number of points Refer to table *Addresses and Commands, p. 33* column 3 (decimal 14 = 0E hex) **5.** Checksum Do not alter

Step	Action
9	Configuration for: Holding Registers / Response. Click on the left-hand side on the relevant function and you get the windows on the right. **Result:** All values are displayed in hexadecimal (when changing the values you can enter in decimal and it will be automatically changed into hexadecimal).  There are 5 sub menus of the response: **1.** Slave address Default is the Modbus address of the MC32 (decimal 32 = 20 hex) **2.** Function Command 03 (holding registers)! **3.** Byte count Number of bytes (see query): 14 words * 2 = 28 bytes (1C hex) **4.** Data length is 5 bytes (see 3) Data location is 12 (0C hex), because "Read input status" starts at 7 and needs 5 bytes **5.** Checksum Do not alter

Save and Download to the Gateway

Steps to be followed for saving and downloading to the gateway:

Step	Action
1	Save the configuration. 
2	Connect the PC with the gateway. For the connection you need a Modbus cable with RJ45 connectors or you can use a Ethernet cable, because of the similar pin assignment and a RS232 / RS485 converter with a SUB D 9 - female / RJ45 - female connector.
3	Download the configuration. A name for the configuration is recommended.

Result

The gateway is now configured.
You can now proceed with the steps in the SyCon Profibus configuartion tool (See *SyCon Profibus Configuration Tool, p. 36*).

Overview of the Information Available From the XPS-MC Safety Controller

Overview

The following describes the information transmitted by the XPS-MC over Modbus. In the HOLDING Register (command 03) you can see in addition to the diagnostics, also the information for the INPUTS (command 01) and the OUTPUTS (command 02).

Addresses and Commands

Addresses and commands 01 read coil, 02 read input, 03 holding - registers:

Addresses (hexadecimal)	Addresses (decimal)	Size of Data	Supported Modbus Function	Results for Usage
0100-0127	256-295	40 bits	01 (0x01) (read coil)	8 bit output data /32 bit input data (0 = OFF, 1 = ON)
0200-0227	512-551	40 bits	02 (0x02) (read input)	32 bit input data /32 bit output data (0 = OFF, 1 = ON)
1000-100D	4096-4109	14 words	03 (0x03) (holding registers)	Information and errors for details refer to next table

Holding Registers

Information about the 14 words of the holding registers:

Word Address (hexa-decimal)	Word Address (decimal)	High Byte	Low Byte	Details
Hardware and Configuation				
1000	4096	Mode	Status	Mode bit4: 0 = XPSMC32 bit4: 1= XPSMC16 bit6: 1 = config OK Status bit0: 1 = RUN bit1: 1 = CONF bit3: 1 = INT Error bit4: 1 = EXT Error bit5: 1 = STOP
1001	4097			reserved

Word Address (hexa-decimal)	Word Address (decimal)	High Byte	Low Byte	Details
I/O-Data				
1002	4098	Input data (Input 1-8)	Input data (Input 9-16)	Bit 1 = corresponding in/output on
1003	4099	Input data (Input 17-24)	Input data (Input 25-32)	
1004	4100	not used (always 0)	Output data (Output 1-8)	
I/O-Errors				
1005	4101	Input error (Input 1-8)	Input error (Input 9-16)	Bit 1 = corresponding in/output error
1006	4102	Input error (Input 17-24)	Input error (Input 25-32)	
1007	4103	not used (always 0)	Output error (Output 1-8)	
Diagnostic Hints (DH)				
1008	4104	(DH 1) Index High	(DH 1) Index Low	Index * number of devices Message Diagnostic Hint Significtaion: see next table * The index gives the order of the devices in the configuration. The indexes for all devices can be found in the protocol of the configuration.
1009	4105	not used (always 0)	(DH 1) Message	
100A	4106	(DH 2) Index High	(DH 2) Index Low	
100B	4107	not used (always 0)	(DH 2) Message	
100C	4108	(DH 3) Index High	(DH 3) Index Low	
100D	4109	not used (always 0)	(DH 3) Message	

Diagnostic in the Holding Registers

Error meassage and indication of XPS-MC:

Code No.	Meaning	Status
0	OK, no message	Operation
1	Short-circuit between inputs	Error
2	Hardware defect	
3	Muting error	
4	Override timeout	
5	Timeout error	
6	Over travel exceeded	
7	Short-circuit	
8	Muting lamp defect	
9	Cam switch mechanism defect	
10	Press safety valve defect	
11	External voltage defect	
12	Output will not switch ON	
13		
14		
15		
16	Reset button blocked	Indication
17	Timeout	
18	Incomplete opening	
19	Start interlock active	
20	Open circuit	
21	Delay time running	
22	Check locking device	
23	Check valve	
24	Unexpected muting signal	
25		
26		
27		
28		
29		
30		
31		

3.3 SyCon Profibus Configuration Tool

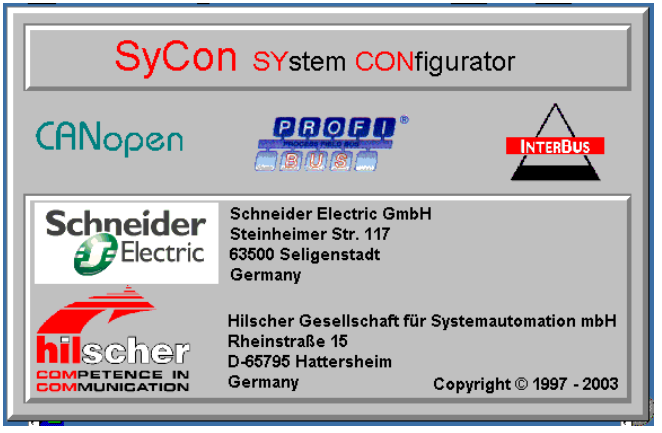
SyCon Profibus Configuration Tool

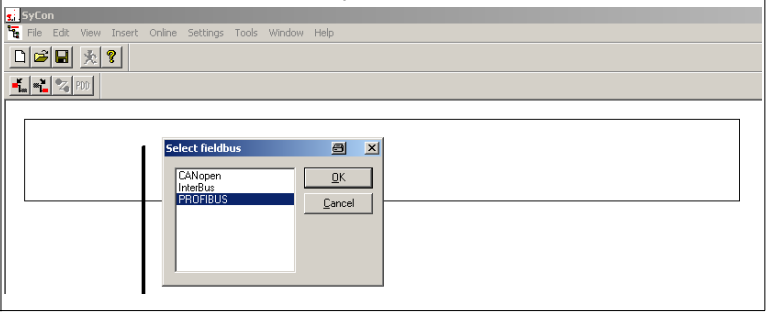
Introduction

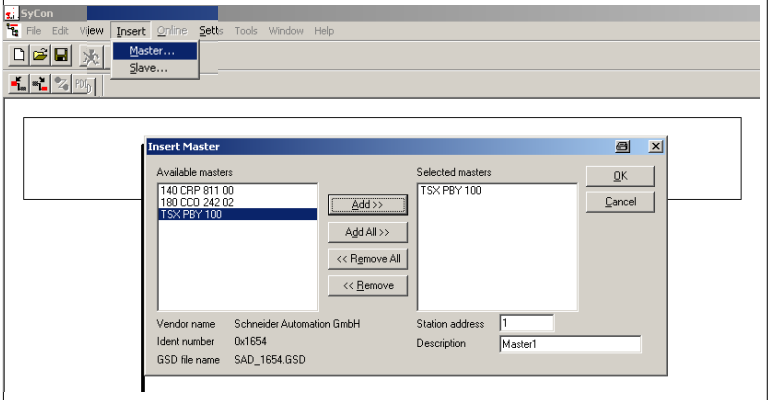
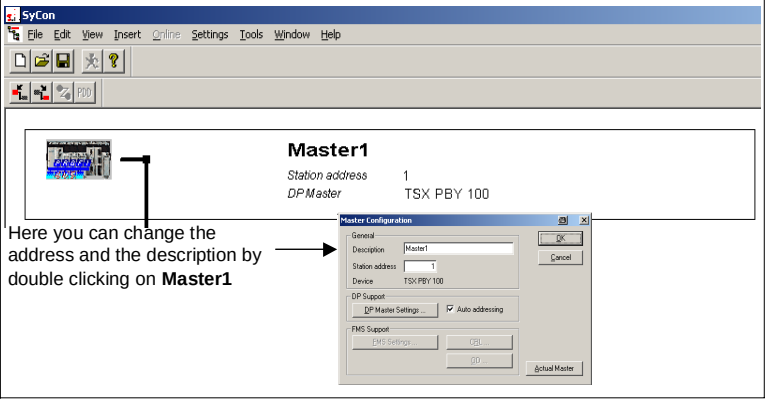
With this software tool it is possible to configure the PROFIBUS network and generate an ASCII file for the Premium PLC in Unity Pro.

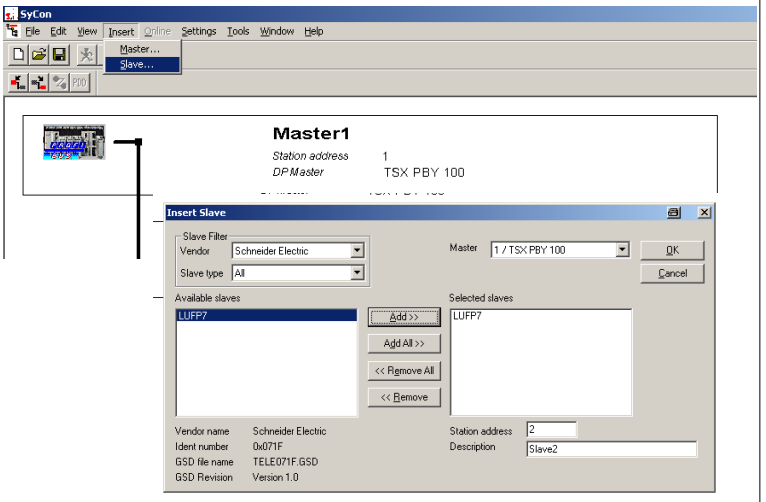
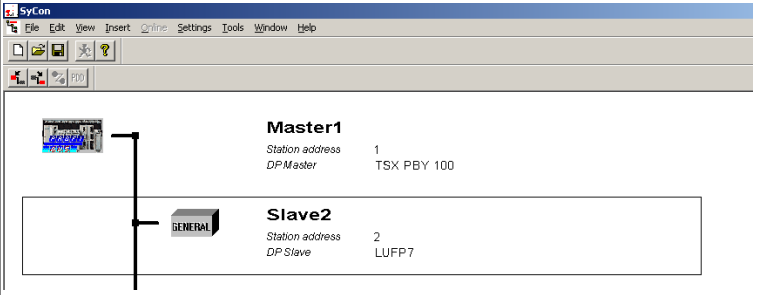
Configuring the PROFIBUS Network and Generating an ASCII File

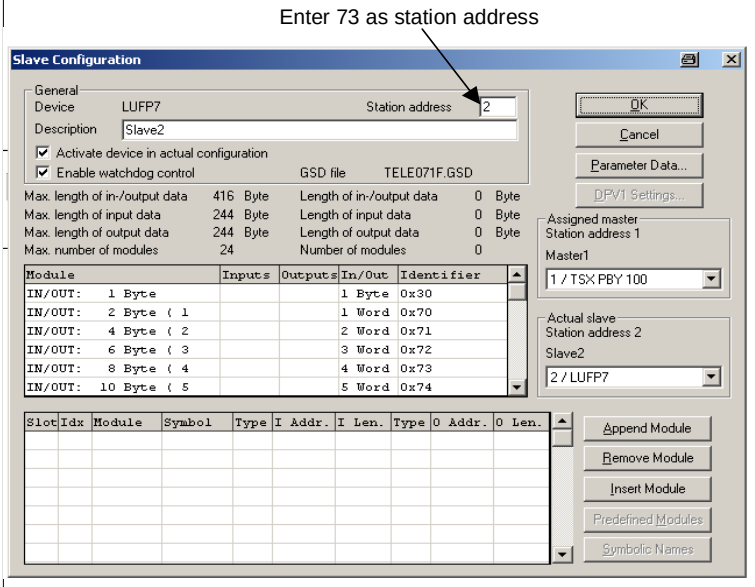
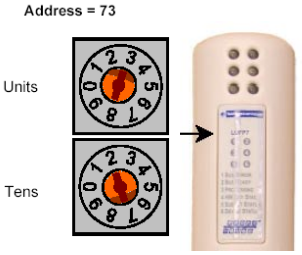
Steps to be followed for configuring the PROFIBUS Network and generating an ASCII file:

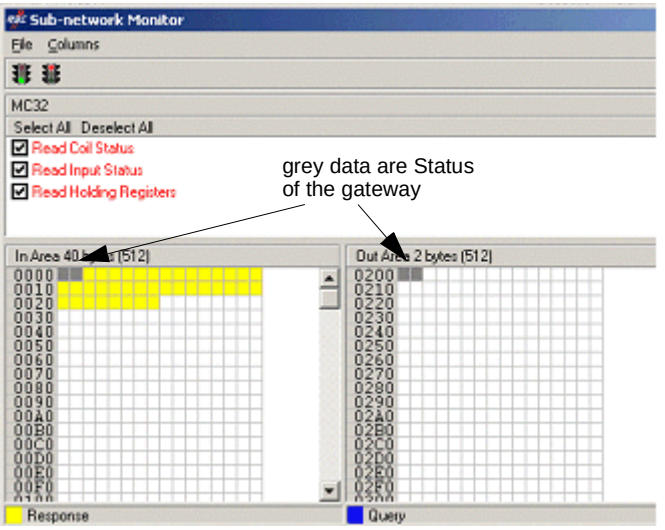
Step	Action
1	For the slave configuration, the GSD file is needed. In our example, it is the file TELE071F.GSD. This file must be in the right folder for the GSD files. It is in the location where SyCon was installed. There, you will find a folder named "Fieldbus". In this folder there are folders called "CANopen, Interbus..." and also a folder called "PROFIBUS". In the Profibus folder, there is folder called "GSD", where you will find the GSD files. Example for a folder path: "c:\programms\schneider electric\SyCon\Fieldbus\PROFIBUS\GSD". Copy this file in the right directory.
2	Start SyCon. SyCon Start picture 

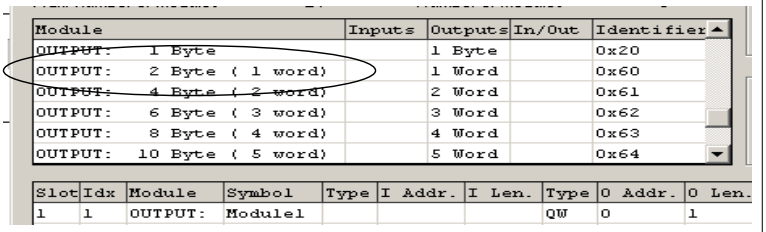
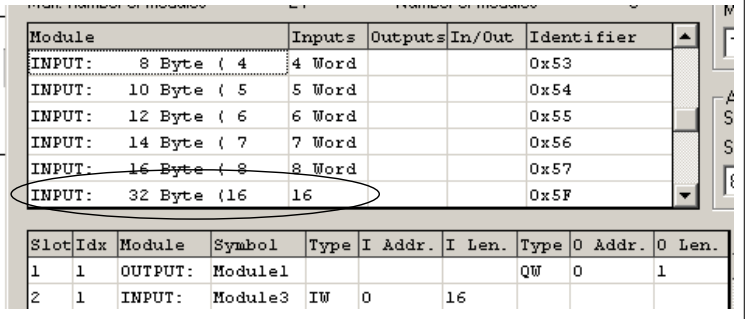
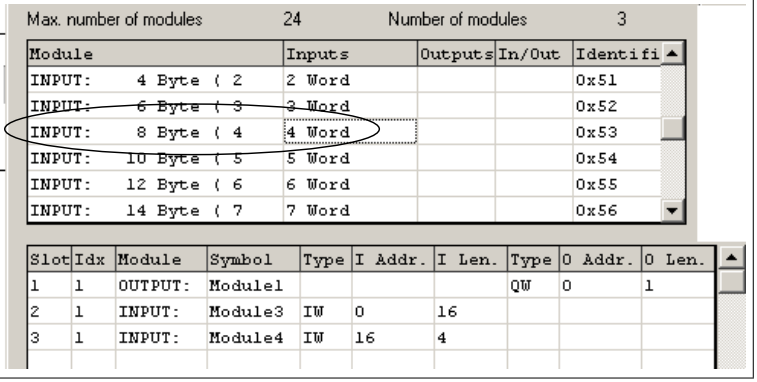
Step	Action
3	Select PROFIBUS as the fieldbus system. 

Step	Action
4	In our example we have a Schneider Premium PLC as PROFIBUS MASTER with the device TSX PBY 100. The other two devices shown in the picture are other Schneider products. In this screeen you can also change the description and the address of the master. Select the master:  **Result:** After inserting the master the window should look like this: 

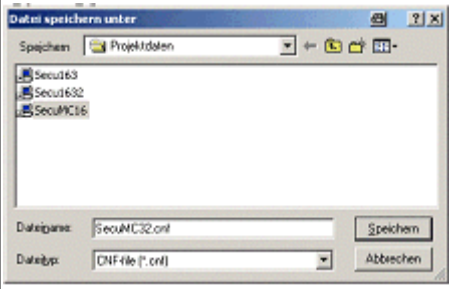
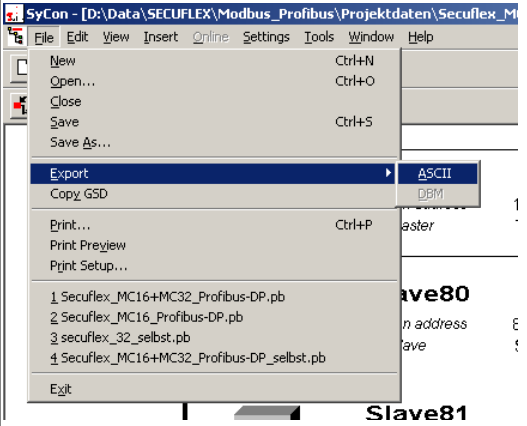
Step	Action
5	Now insert the slave. For this example, it is the gateway. Slave Gateway:  Slave: 

Step	Action
6	By double clicking on **SLAVE1**, you can change the name and the address. (For this example, we use 73.) Configure slave window: 
7	Using the rotaty switches, adjust the gateway to have the same address. Gateway rotary switches: 

Step	Action
8	To configure the slave window you have to know how much data is to be transfered. To find this information, start the **ABC LUFP configuation tool** and press the icon to open the Modbus Memory window. Modbus Memory window in the ABC LUFP configuation tool:  The Modbus Memory window has two areas: • In Area • Out Area So you need an input and output in SyCon.
9	Calculate the amount of date to be transfered: • for the output you need 2 bytes (grey data) = 1 word • for the input you need: **1.** Status: 2 bytes = 1 word (grey data) **2.** Read Coil status: 40 bits = 5 bytes = 2.5 words **3.** Read input status: 40 bits = 5 bytes = 2.5 words **4.** Read holding registers: 14 words (see also *Addresses and Commands, p. 33*) **Conclusion:** 1 word (2 bytes) for output, 20 words (40 bytes) for input (because of the lack of a 20 word input you have to split it in a 16 word and a 4 word module, or the any other combination to get 20 words in total).
10	Switch back to the SyCon configuration tool.

Step	Action
11	In the **Slave Configuration** window select **OUTPUT: 2 Byte (1 word)** for the output. Area out 1 word: 
12	In the **Slave Configuration** window select **INPUT: 32 Byte (16 word)** for the input. Area in 16 words: 
13	In the **Slave Configuration** window select **INPUT: 8 Byte (4 word)** for the input. Area in 4 words: 

Module | Inputs | Outputs | In/Out | Identifier
OUTPUT: 1 Byte | | 1 Byte | | 0x20
OUTPUT: 2 Byte (1 word) | | 1 Word | | 0x60
OUTPUT: 4 Byte (2 word) | | 2 Word | | 0x61
OUTPUT: 6 Byte (3 word) | | 3 Word | | 0x62
OUTPUT: 8 Byte (4 word) | | 4 Word | | 0x63
OUTPUT: 10 Byte (5 word) | | 5 Word | | 0x64
Slot | Idx | Module | Symbol | Type | I Addr. | I Len. | Type | O Addr. | O Len.
1 | 1 | OUTPUT: | Module1 | | | | QW | 0 | 1
Module | Inputs | Outputs | In/Out | Identifier
INPUT: 8 Byte (4 | 4 Word | | | 0x53
INPUT: 10 Byte (5 | 5 Word | | | 0x54
INPUT: 12 Byte (6 | 6 Word | | | 0x55
INPUT: 14 Byte (7 | 7 Word | | | 0x56
INPUT: 16 Byte (8 | 8 Word | | | 0x57
INPUT: 32 Byte (16 | 16 | | | 0x5F
Slot | Idx | Module | Symbol | Type | I Addr. | I Len. | Type | O Addr. | O Len.
1 | 1 | OUTPUT: | Module1 | | | | QW | 0 | 1
2 | 1 | INPUT: | Module3 | IW | 0 | 16
Max. number of modules 24 Number of modules 3
Module | Inputs | Outputs | In/Out | Identifi
INPUT: 4 Byte (2 | 2 Word | | | 0x51
INPUT: 6 Byte (3 | 3 Word | | | 0x52
INPUT: 8 Byte (4 | 4 Word | | | 0x53
INPUT: 10 Byte (5 | 5 Word | | | 0x54
INPUT: 12 Byte (6 | 6 Word | | | 0x55
INPUT: 14 Byte (7 | 7 Word | | | 0x56
Slot | Idx | Module | Symbol | Type | I Addr. | I Len. | Type | O Addr. | O Len.
1 | 1 | OUTPUT: | Module1 | | | | QW | 0 | 1
2 | 1 | INPUT: | Module3 | IW | 0 | 16
3 | 1 | INPUT: | Module4 | IW | 16 | 4

Step	Action
14	Save the configuration. 
15	Export this configuration for Unity.  **Note:** Only 8 characters are allowed for the filename.

Result

The file for the fieldbus master is now ready. You can proceed with *Configure Unity Pro (Profibus Master), p. 44*.

3.4 Configure Unity Pro (Profibus Master)

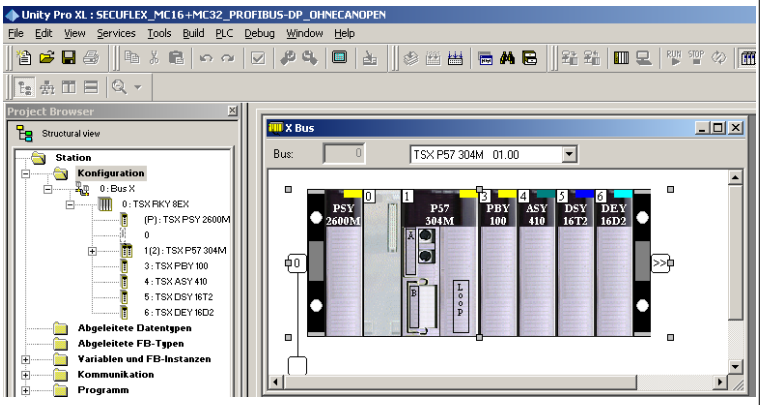
Configure Unity Pro (Profibus Master)

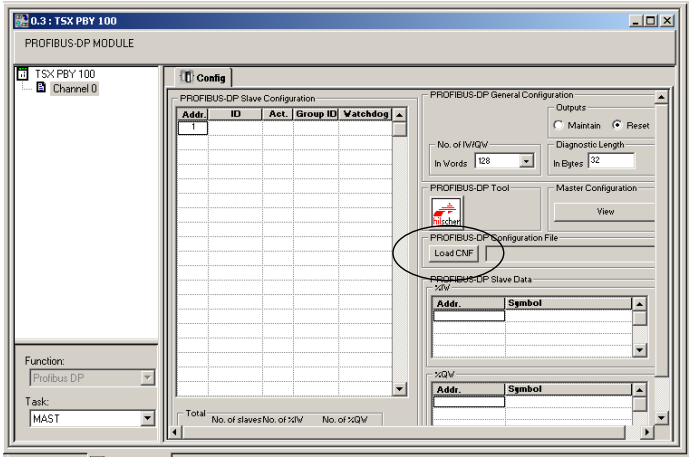
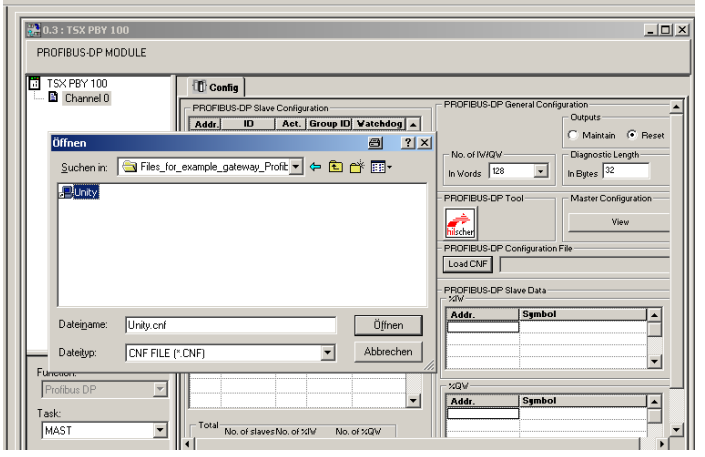
Introduction

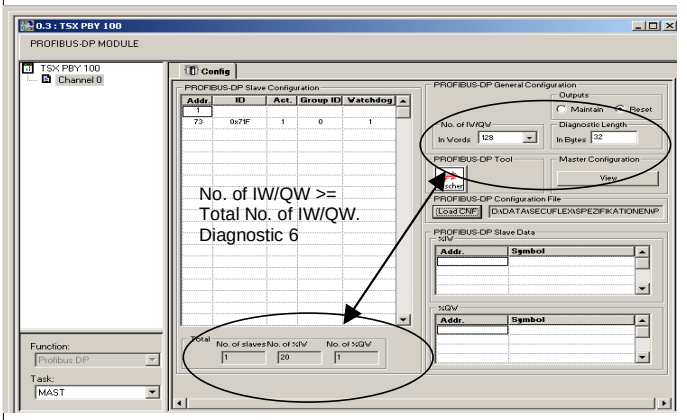
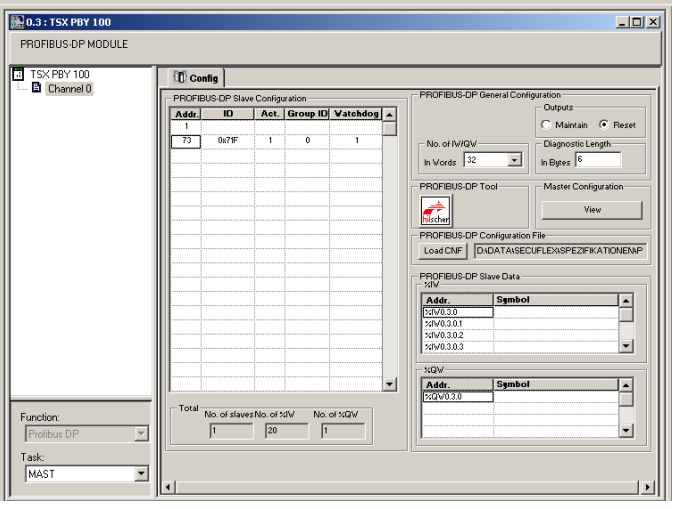
To run the Profibus you need a Master. In this example we take the Schneider Premium with the Profibus Interface TSX PBY 100.

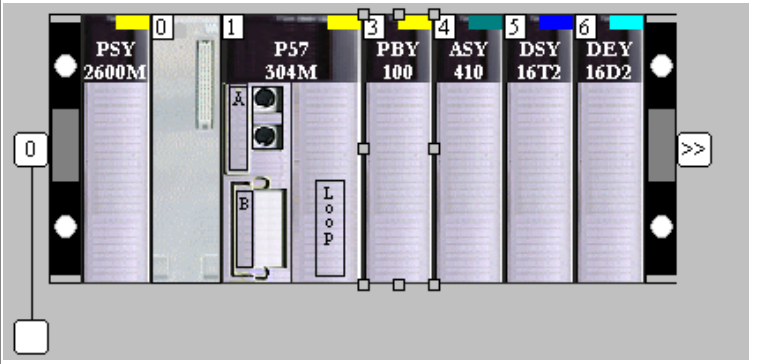
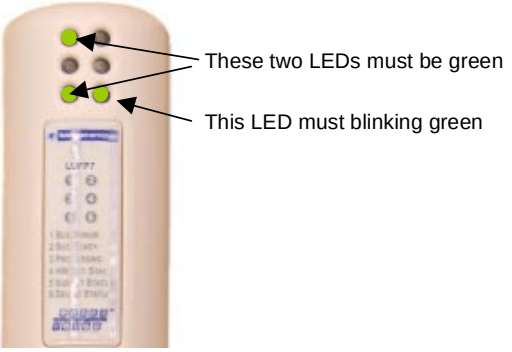
Configure Unity Pro

Steps to be followed for configuring Unity Pro:

Step	Action
1	Start Unity Pro.
2	Define a PLC configuration (example shown below). PLC configuration in Unity Pro: 
3	To import the SyCon file double click on the PBY 100 (see PLC configuration in step 2). **Result:** The PBY 100 configuration window appears.

Step	Action
4	Import the CNF file by clicking **Load CNF**. Import SyCon file in Unity Pro: 
5	Select the SyCon file. 

Step	Action
6	Adapt the IW / IQ size.  **Note:** The diagnostic length can be set between 6 and 24 bytes. IW/QW can only be set to 32, 64, 128 and 242. **Result:** Adapted sizes 
7	Generate the file for the Premium PLC and download it.

Step	Action
8	Run the PLC. **Result:** PLC and network should be in RUN state. Unity configurator window without an error (no red fields):  Front plate of PBY 100: 

Result

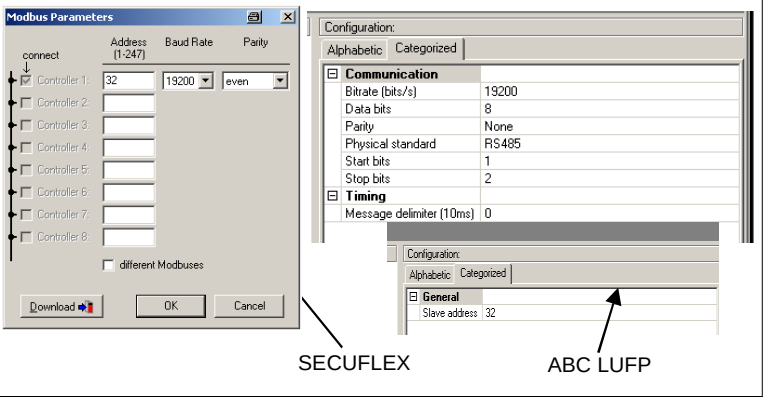
Your system is now working.
If you encounter any problems proceed with *Steps to Check When Not Running, p. 48*.

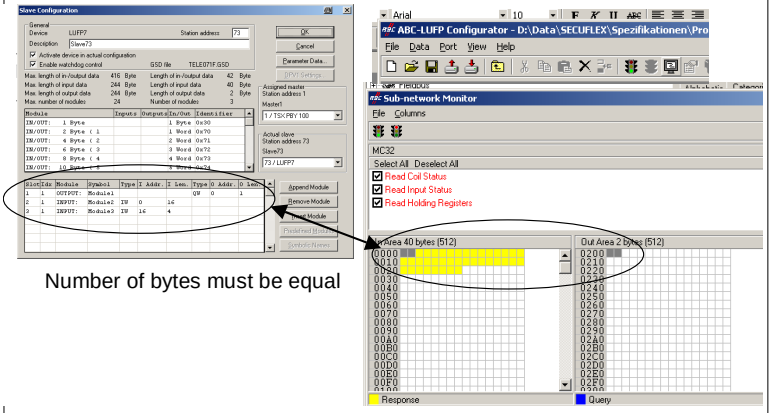
3.5 Steps to Check When Not Running

Steps to Check When Not Running

Check

Steps to be followed when the system is not running:

Step	Action
1	Check that the **XPS-MC Safety Controller** has the right configuration, specifically the right MODBUS address. In our example, the XPS-MC address is 32! Correct MODBUS configuration in XPS-MC Safety Controller and in the ABC LUFP: 

Step	Action
2	Check the Profibus slave address in **SyCon** and the number of words. The number of bytes must be equal, or lower in the SyCon than configured in the **ABC** configuration tool. Here in the ABC tool 40 Input Bytes and 2 Output Bytes are provided = > in SyCon 40 / 2 = 20 input words and 2 / 2 = 1 output word in maximum. SyCon / ABC check:  Number of bytes must be equal
3	Check that the SyCon address and hardware address of the gateway are equal. In our example, the gateway address is 73! Hardware address and SyCon address: